

REMARKS

Claims 1-12 were rejected. Claim 1 is amended herein to more particularly pointing out and distinctively claiming subject matter of which the applicant regards as the invention. Support for the amendment can be found in the Specification, in particular, page 8, line 15, through page 10, line 6. No new matter is introduced. No claim is newly added or cancelled. Claims 1-12 are pending.

Regarding drawings:

In accordance with 37 C.F.R. § 1.121, Figs. 4 and 5 are submitted herewith on separate sheets showing the proposed changes in red. Support for the amendment can be found in the Specification, particularly on page 9, lines 30-32, and page 13, lines 9-22, where elements 6A, 6B, and 6C respectively refers to conductive cores of probes 5A, 5B, and 5C; and where elements 7A, 7B, and 7C respectively refers to insulation layers of probes 5A, 5B, and 5C. Breaking line 16C was mislabeled as element "8C" in Fig. 5. The Examiner's approval on the proposed changes to these inadvertent errors is respectfully requested. To expedite the examination process and to place the present application in a condition for allowance, a set of new drawings in compliance with 37 C.F.R. § 1.84 including the changes is filed herewith.

Regarding 35 U.S.C. § 103(a) rejections:

Claims 1, 5-9 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 4,667,149 to Cohen et al. in view of U.S. Pat. No. 4,423,373 to Le Croy. Claims 2-4, 10 and 12 were rejected over Cohen et al., Le Croy, and a previously cited reference U.S. Pat. No. 6,218,848 to Hembree et al. As discussed in the previous Response, Hembree et al. teach away from the claimed invention at least because Hembree et al. require that the patterns of probe contacts must match exactly one-to-one the patterns of the wafer contacts [col. 5, lines 41-43]. The inapplicability of Hembree et al., which the Office action did not argue to the contrary, has been discussed in detail in

the previous Response and thus is not repeated here. Nonetheless, the rejections are respectfully traversed as discussed below with respect to independent claim 1.

Claim 1 of the present application recites, among others,

- 5 “A probe apparatus for testing a circuit chip, said probe apparatus comprising a probe group having two or more probes within a guiding boundary for independently conductively contacting a single terminal of said circuit chip.”

10 At the time of the invention, one skilled in the art would have unequivocally recognized that the combination of Cohen et al. and Le Croy does not teach or suggest at least the following claim elements:

1. a probe GROUP having two or more probes WITHIN A GUIDING BOUNDARY;
2. INDEPENDENT conductive contacting by each of the two or more probes; and
- 15 3. a SINGLE TERMINAL of a circuit chip is contacted by the two or more probes.

Regarding the first claim element, the Office action seemed to rely, not on Cohen et al.’s invention, but on the prior art method [Fig. 1; col. 3, lines 15-20] from which Cohen et al. specifically teach away [col. 4, lines 5-17]. Notwithstanding, as a whole, Cohen et al. disclose precision nondestructive testing of metals using at least four individually
20 SPACED probes [col. 2, lines 5-8]. The examiner seemed to agree that COHEN ET AL. DO NOT DISCLOSE A PROBE GROUP HAVING TWO OR MORE PROBES WITHIN A GUIDING BOUNDARY, but contended that “Le Croy discloses that it is well known for probe apparatuses to include a guiding boundary for a probe group having
25 two or more probes”, citing Fig. 2, elements 42, 44, and 50. Applicant cannot find support of such statement in Le Croy. On the contrary, there is NO GUIDING BOUNDARY for a probe group having two or more probes in Le Croy’s handheld test probe. According to Le Croy, element 42 refers to a configuration of probe 15, i.e., a cylindrical shaft formed of electrically conductive material [col. 4, lines 57-58]; element 44

refers to the contact tip of probe 15 [col. 5, lines 1-42]; and element 50 refers to a handle to which the cylindrical shaft 42 is ADHESIVELY SECURED [col. 5, lines 43-49]. Consequently, one skilled in the art would have readily recognized that Cohen et al. and Le Croy, as a whole, do not teach or suggest a guiding boundary for GUIDING two or more probes grouped together within the boundary.

Regarding the second claim element, as Cohen et al. point out, in the prior art method, the current passes through one set of probes (10, 11) and the IR voltage drop is detected across another set of probes (12, 13) [col. 3, lines 15-20]. In other words, NONE of the probes 10, 11, 12, and 13 is to INDEPENDENTLY conductively contact the sheet metal test surface. Again, the examiner seemed to agree that Cohen et al. do not disclose a probe group having two or more probes within a guiding boundary for independently conductively contacting a single terminal of a circuit chip, but contended that such claim element is well known in view of Le Croy's disclosure, citing column 7, lines 3-15, and Fig. 5, elements 86-88. According to Le Croy, elements 86 and 88 are two, and only two, contact points of needle-shaped electrodes 80 and 82, respectively, of a handheld test probe, *id.* Electrodes 80 and 82 are adhesively bonded to each other, *id.* They are adapted to be brought into simultaneous contact with a current conducting segment being tested [col. 1, line 66, through col. 2, line 2]. They are NOT two probes bundled together, each independently conductively contacting a single terminal of a circuit chip. In fact, Le Croy specifically TEACHES AWAY from using two pairs of spaced apart conductors [col. 1, lines 11-33], such as the prior art method disclosed in Cohen et al. Accordingly, one skilled in the art would have had no reason to combine Cohen et al. and Le Croy.

Regarding the third claim element, Cohen et al., as well as the prior art method disclosed therein, is for testing a piece of sheet metal to which good electrical contacts cannot be applied easily [col. 3, lines 15-17]; for example, welds with rusty surfaces [col. 11, lines 22-31], a flat or curved moving articles, etc. [col. 12, lines 39-48]. In Cohen et al., the cited column 1, lines 8-9, broadly refers to "testing of metals," which could be an infinite

or non-infinite sheet of metal [col. 3, lines 28-60]. Cohen et al. DO NOT teach or suggest a probe group having two or more probes conductively independently contacting A SINGLE TERMINAL OF A CIRCUIT CHIP. Notice the large spacing between probes shown in Fig. 1 of Cohen et al. As is well known in the art, the probe spacing is important because it allows calibration in measuring sheet metals [*id.*]. Although the Office action did not articulate, it is submitted that Le Croy cannot fill the void of Cohen et al. In Le Croy, the handheld test probe is for an operator to manually testing the ELECTRICAL LEAD TYPICALLY FOUND ON A PRINTED CIRCUIT BOARD [col. 2, lines 62-67; Fig. 2]. Le Croy does not teach or suggest that the handheld test probe is capable of contacting a single terminal of a chip, which is minuscule compared to a printed circuit board. Therefore, one skilled in the art would have readily recognized that, as a whole, Cohen et al. and Le Croy, DO NOT teach or suggest a probe group having two or more probes conductively independently contacting A SINGLE TERMINAL OF A CHIP.

At least for the foregoing reasons, Applicant respectfully submits that the present invention is not obvious in view of the alleged combinations of Cohen et al. and Le Croy, and/or in view of Hembree et al. In particular, independent claims 1 and 11 recite subject matter not reached by any applicable prior art under 35 USC § 103(a) and therefore should be allowed.

Reliance is placed on *In re Fine*, 5 USPQ 2d 1596, 1600 (Fed. Cir. 1988) and *Ex parte Kochan*, 131 USPQ 204 (Bd. App. 1960) for allowance of the dependent claims 2-10 and 12, since they differ in scopes from their respective parent independent claims 1 and 11 which are submitted as patentable.

Claim 1 is nonetheless amended herein to more particularly pointing out and specifically claiming subject matter which applicant regards as the invention. In particular, amended independent claim 1 recites:

“A probe apparatus for testing a circuit chip, said probe apparatus comprising a probe group having two or more probes, each of the probes having a conductive core, an insulation layer, and a tip, at least two of the probes having a common contacting center within a probe target area, and each of the probes independently conductively contacting within a guiding boundary a single terminal of said circuit chip and allowing a test path resistance be measured without affecting said circuit chip.”

Conclusion

This Reply is submitted as proper and complete in that it places the application in a condition for allowance. Particularly, the present Reply is submitted as not adding new matters and not requiring further searches. Since the examiner has done a thorough search in the previous actions in light of the disclosure and claims, no new search would be necessary. Accordingly, Applicant respectfully submits that, by the amendments presented herein, the present application is in a condition for allowance. Favorable consideration and a Notice of Allowance of all the claims are therefore earnestly solicited. The Examiner is sincerely invited to telephone the undersigned at (650) 331-8413 for discussing an Examiner's Amendment or any suggested actions for accelerating prosecution and moving the present application to allowance.

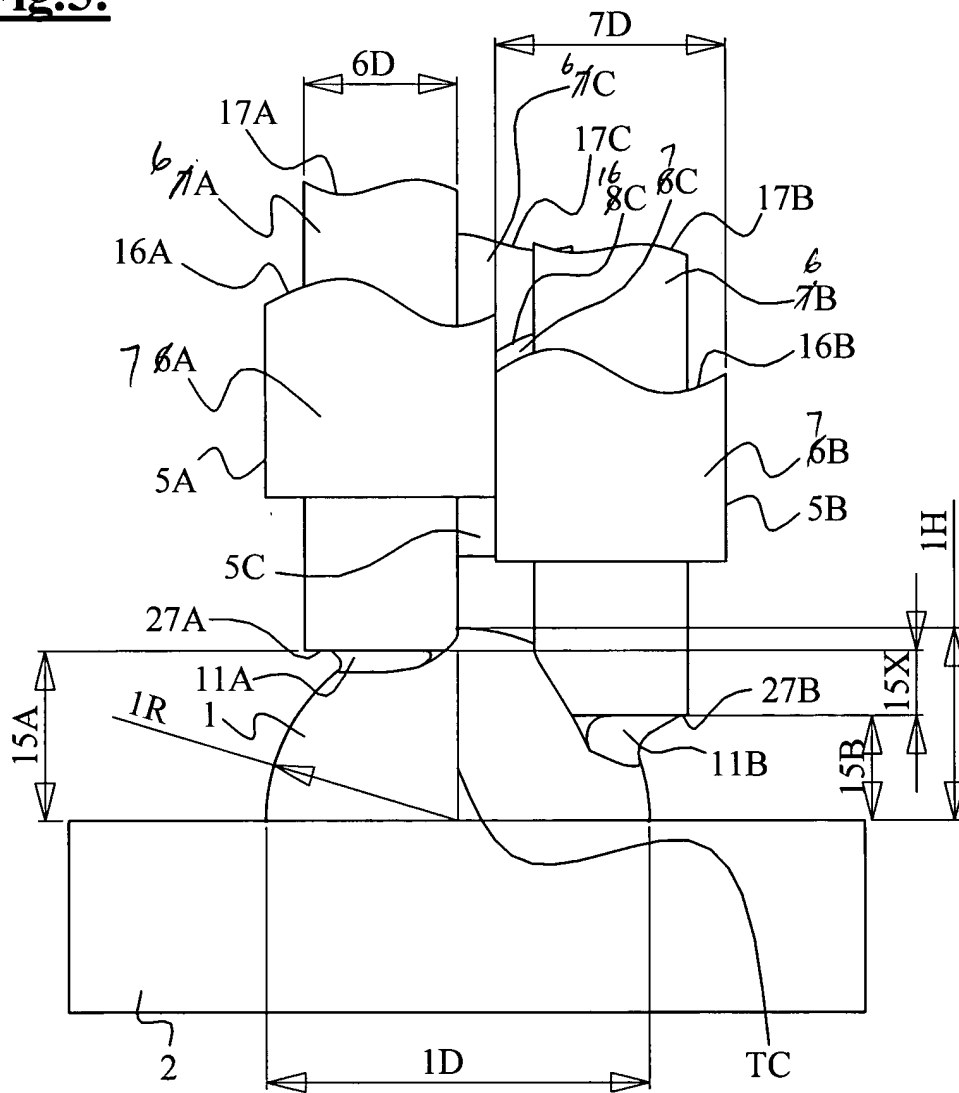
Respectfully submitted,



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Fig.5:



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